

# KIC 007829836

## Q1-17 DR25 TCE Parameters

| TCE          | Run Type | KOI?    | Period (Days) | Epoch (BKJD) | Depth (ppm) | Duration (Hours) | MES | SNR | $R_{\star}$ ( $R_{\odot}$ ) | $T_{\star}$ (K) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 007829836-01 | OBS      | 5433.01 | 237.820217    | 320.182137   | 561.6       | 14.312           | 9.4 | 9.9 | 1.03                        | 5878            | 3.13                   | 1.98                   |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments     |
|--------------|----------|------|-------|---|---|---|---|--------------|
| 007829836-01 | OBS      | PC   | 0.56  | 0 | 0 | 0 | 0 | CENT_KIC_POS |

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

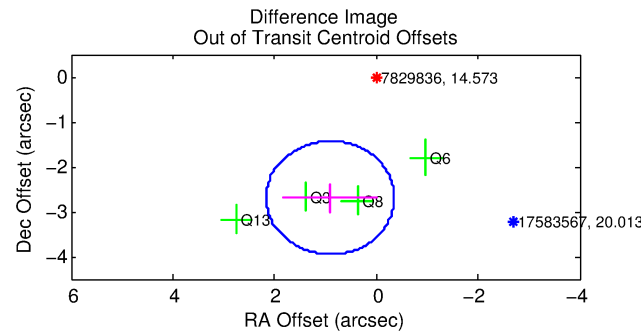
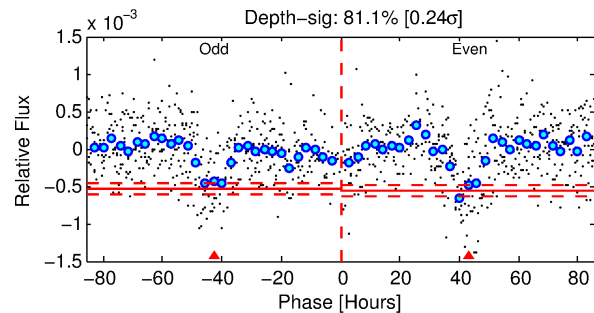
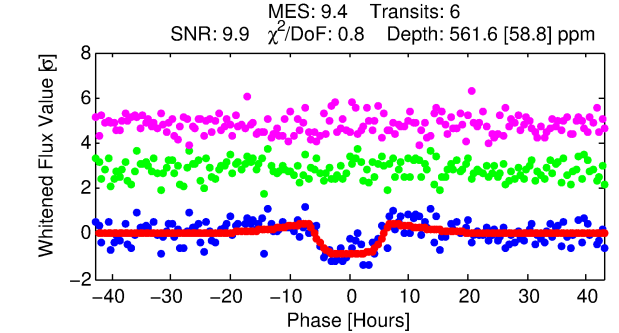
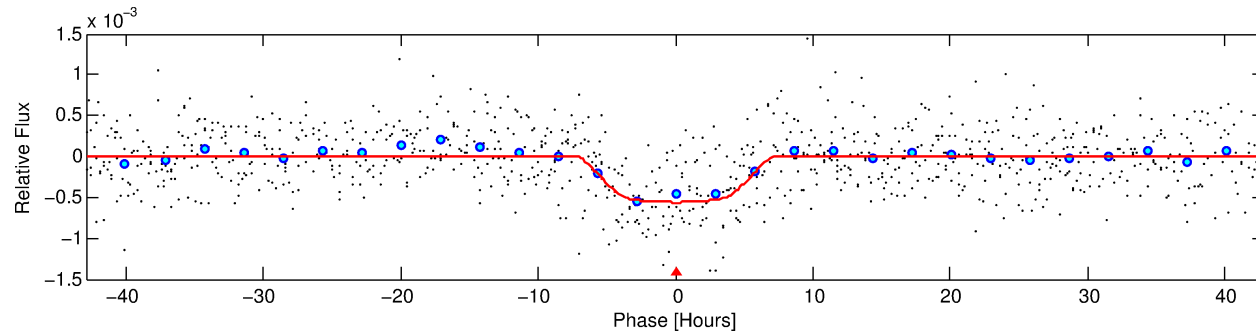
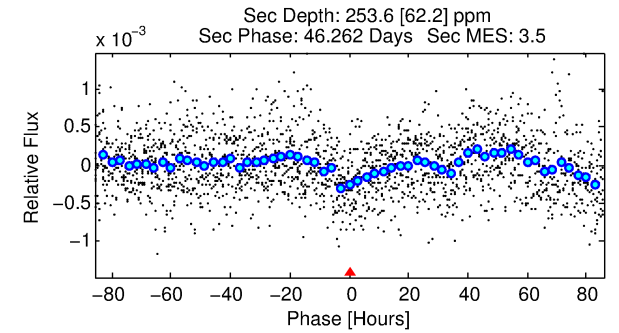
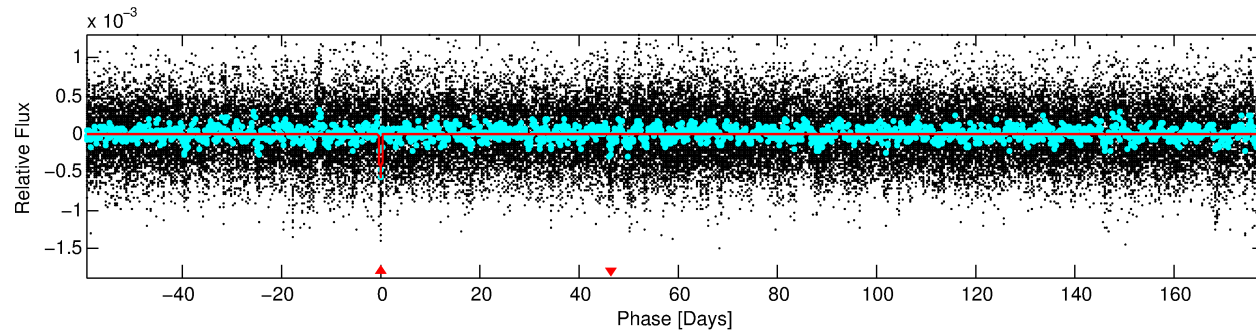
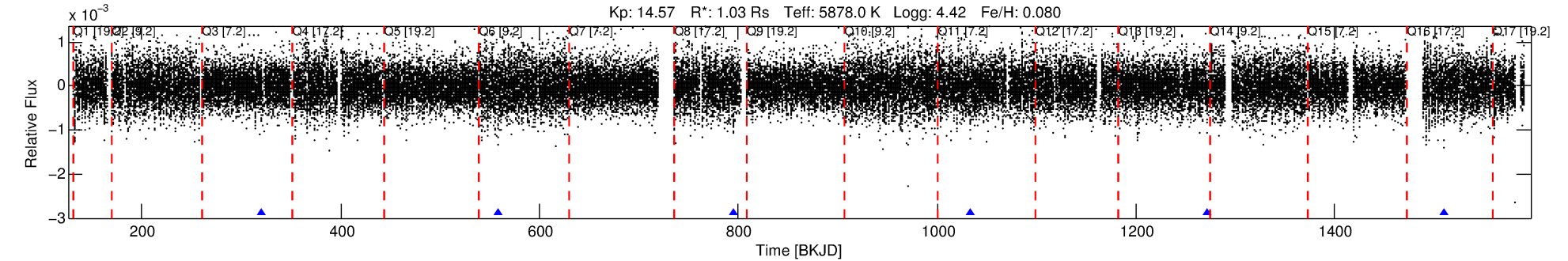
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007829836-01

No Significant Match Found

# DV One-Page Summary

KIC: 7829836 Candidate: 1 of 1 Period: 237.820 d  
KOI: K05433.01 Corr: 0.849



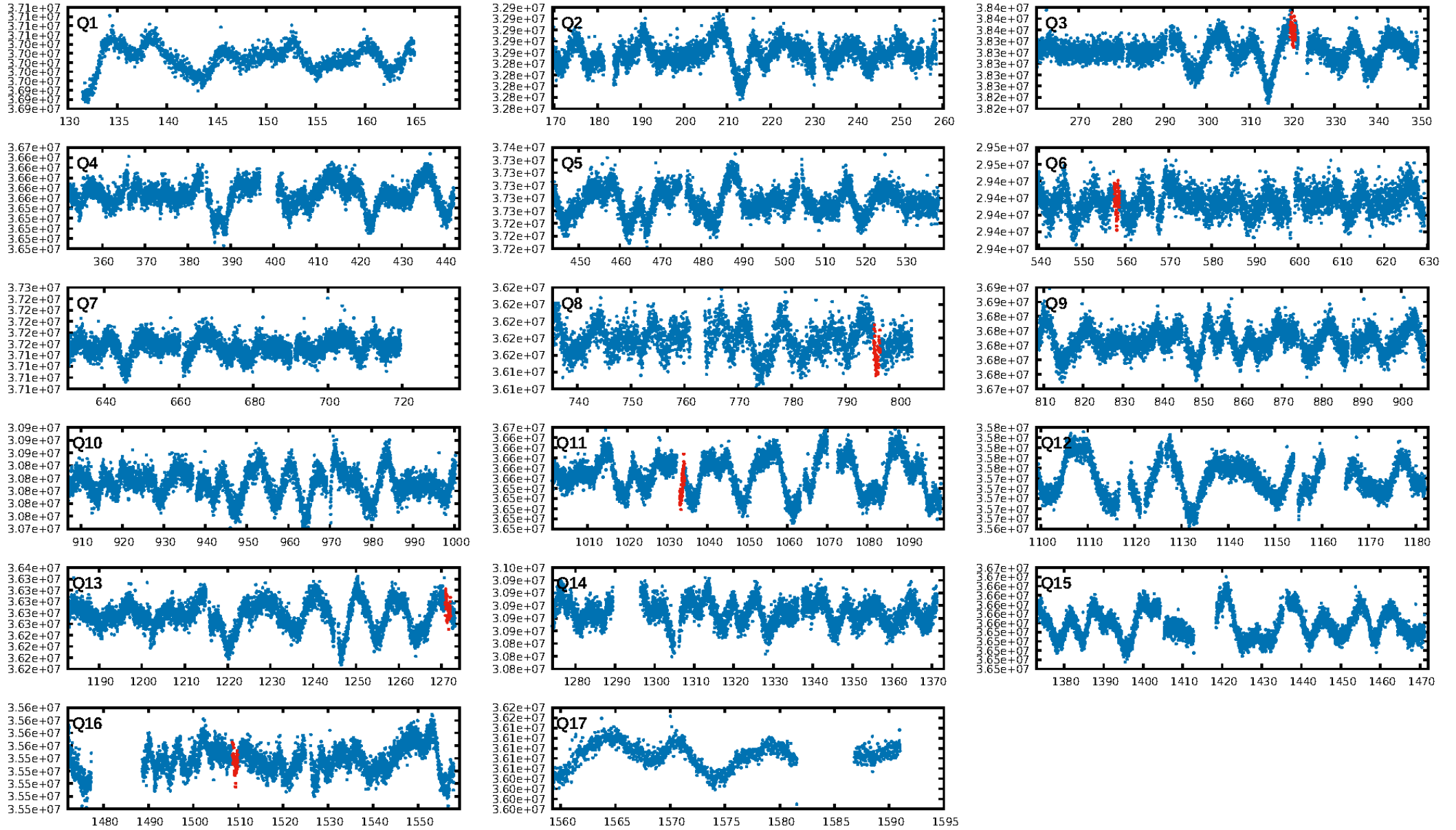
## DV Fit Results:

Period = 237.82022 [0.00643] d  
Epoch = 320.1821 [0.0187] BKJD  
Rp/R\* = 0.0277 [0.0020]  
a/R\* = 48.89 [8.56]  
b = 0.95 [0.02]  
Seff = 1.98 [0.43]  
Teff = 302 [16] K  
Rp = 3.13 [0.55] Re  
a = 0.7606 [0.1062] AU  
Ag = 8249.62 [2902.49] [2.84 $\sigma$ ]  
Teffp = 4457 [322] K [12.87 $\sigma$ ]

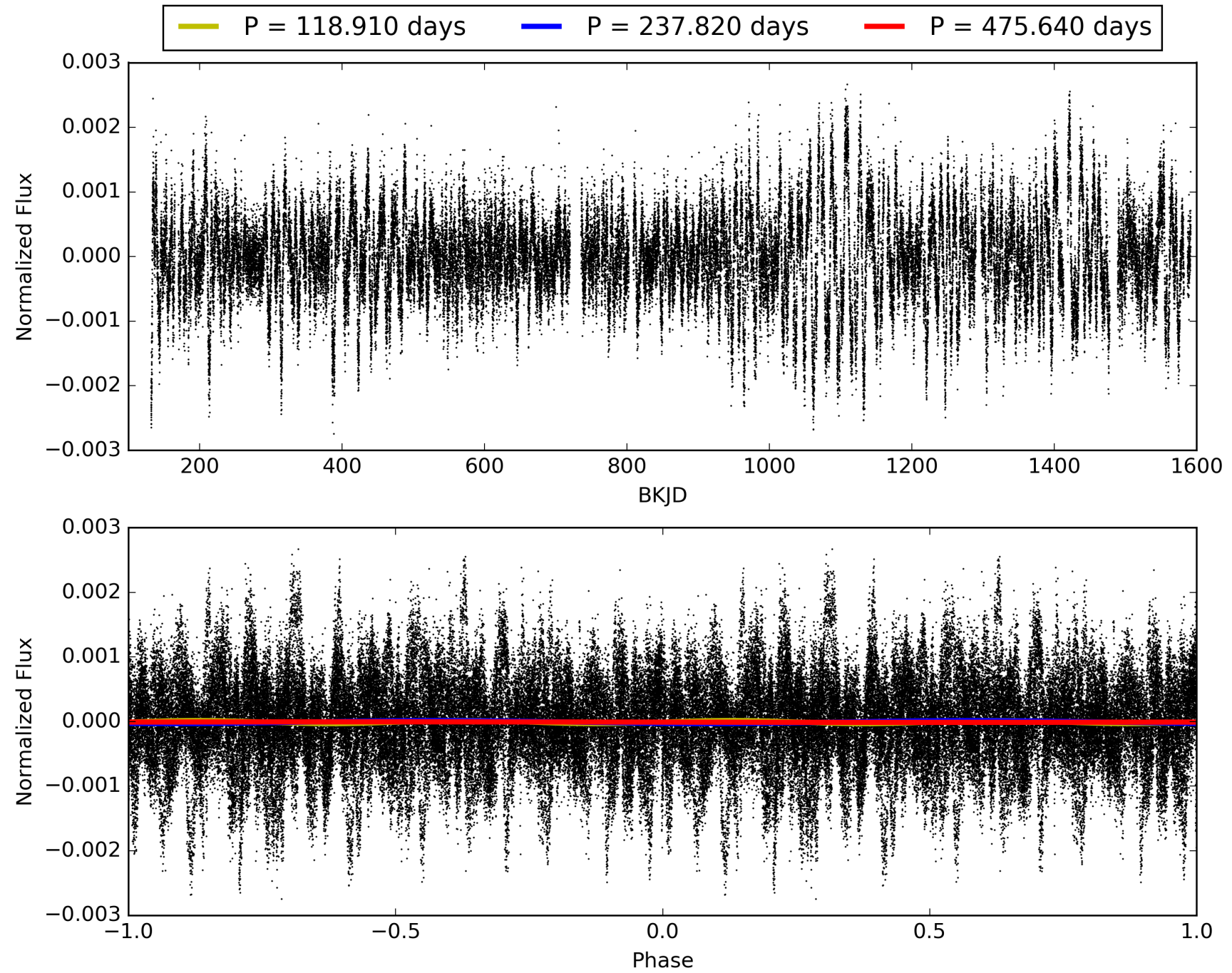
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 94.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.65e-15  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: -58.38  
Centroid-sig: 27.9%  
Centroid-so: 1.018 arcsec [1.36 $\sigma$ ]  
**OotOffset-rm: 2.842 arcsec [6.77 $\sigma$ ]**  
KicOffset-rm: 1.092 arcsec [2.90 $\sigma$ ]  
OotOffset-st: 1/1/1/1 [4]  
KicOffset-st: 1/1/1/1 [4]  
DiffImageQuality-fgm: 1.00 [4/4]  
DiffImageOverlap-fno: 1.00 [4/4]

# TCE 007829836-01, PDC Light Curves

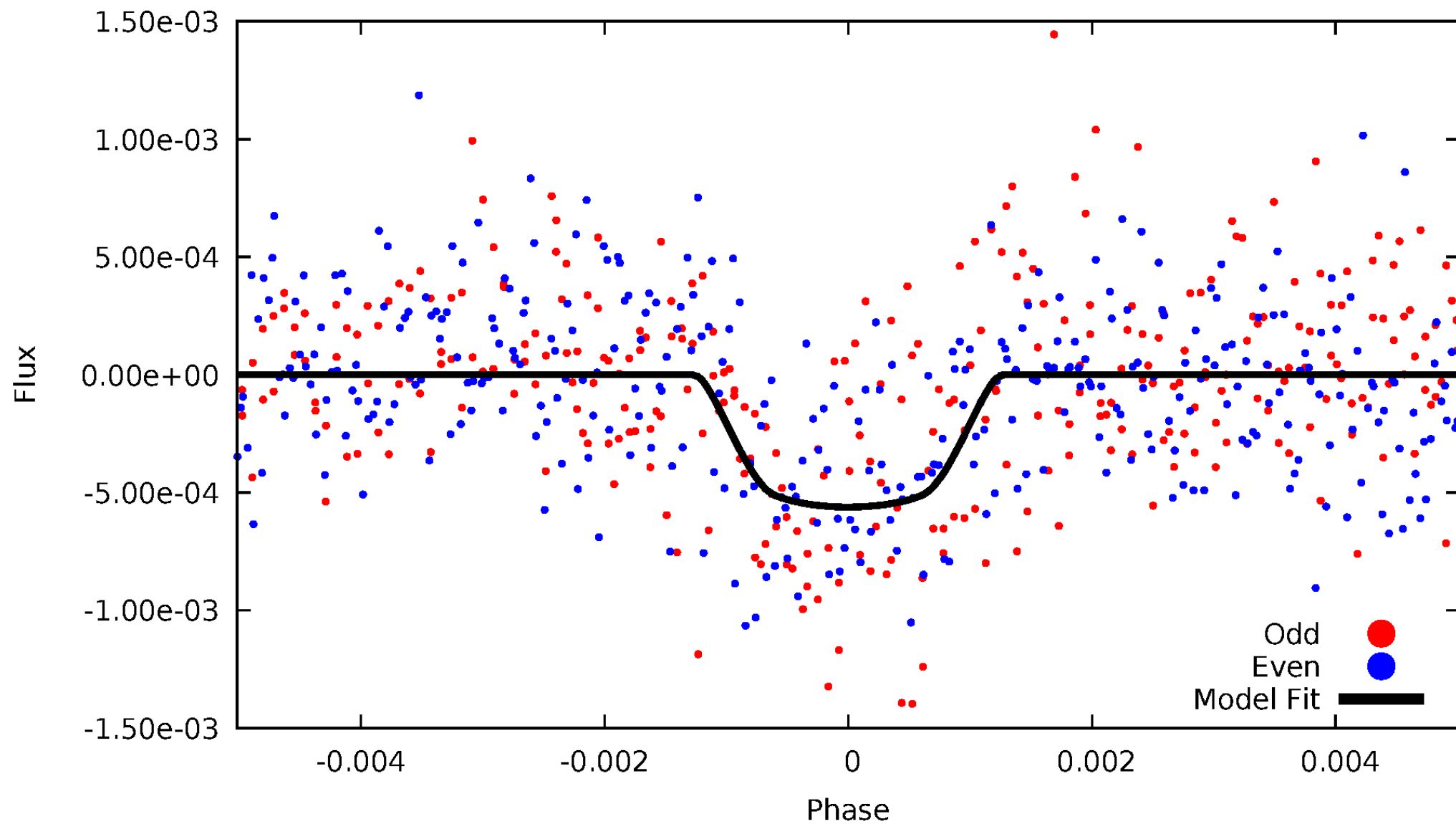


TCE 007829836-01



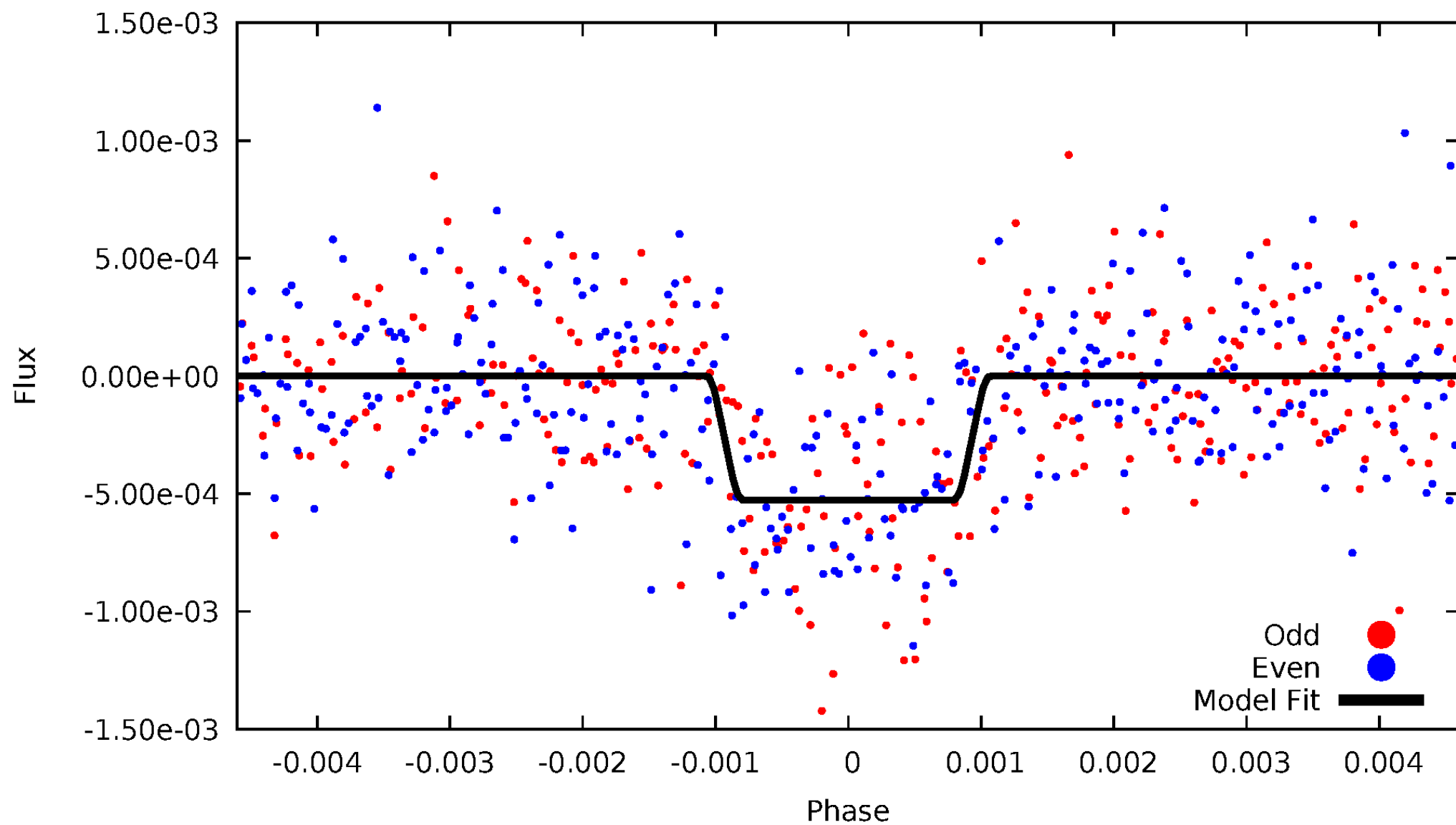
# DV Odd/Even

TCE 007829836-01



# ALT Odd/Even

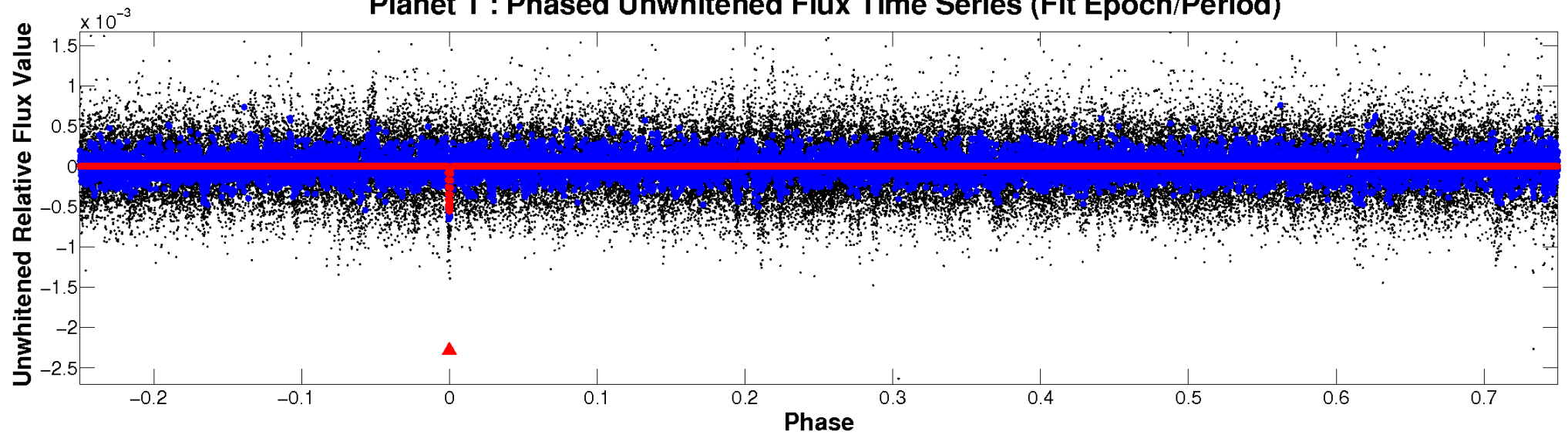
TCE 007829836-01



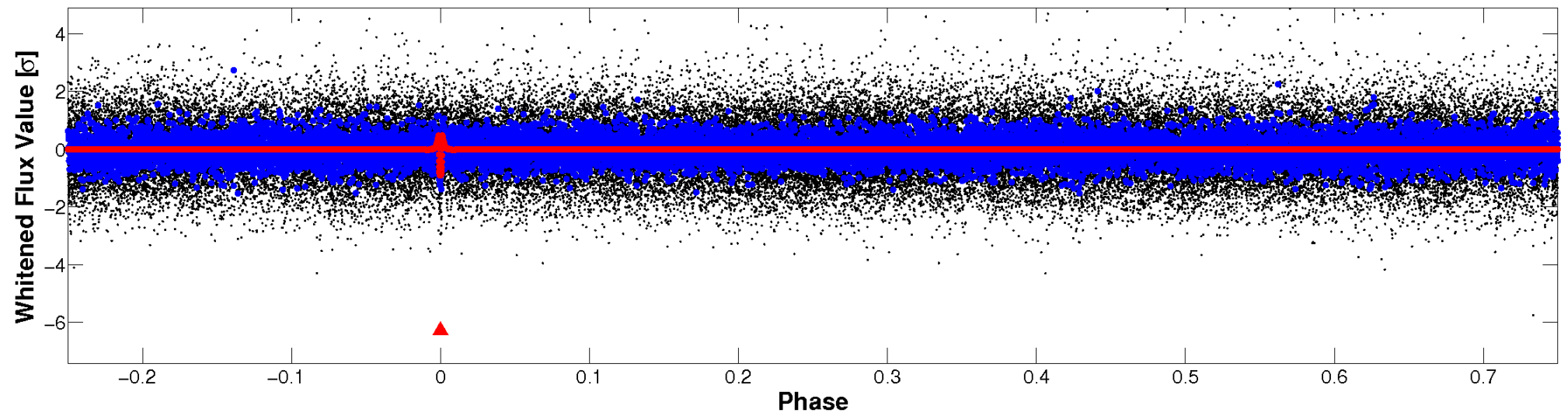


# Non-Whitened Vs. Whitened Light Curve

Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

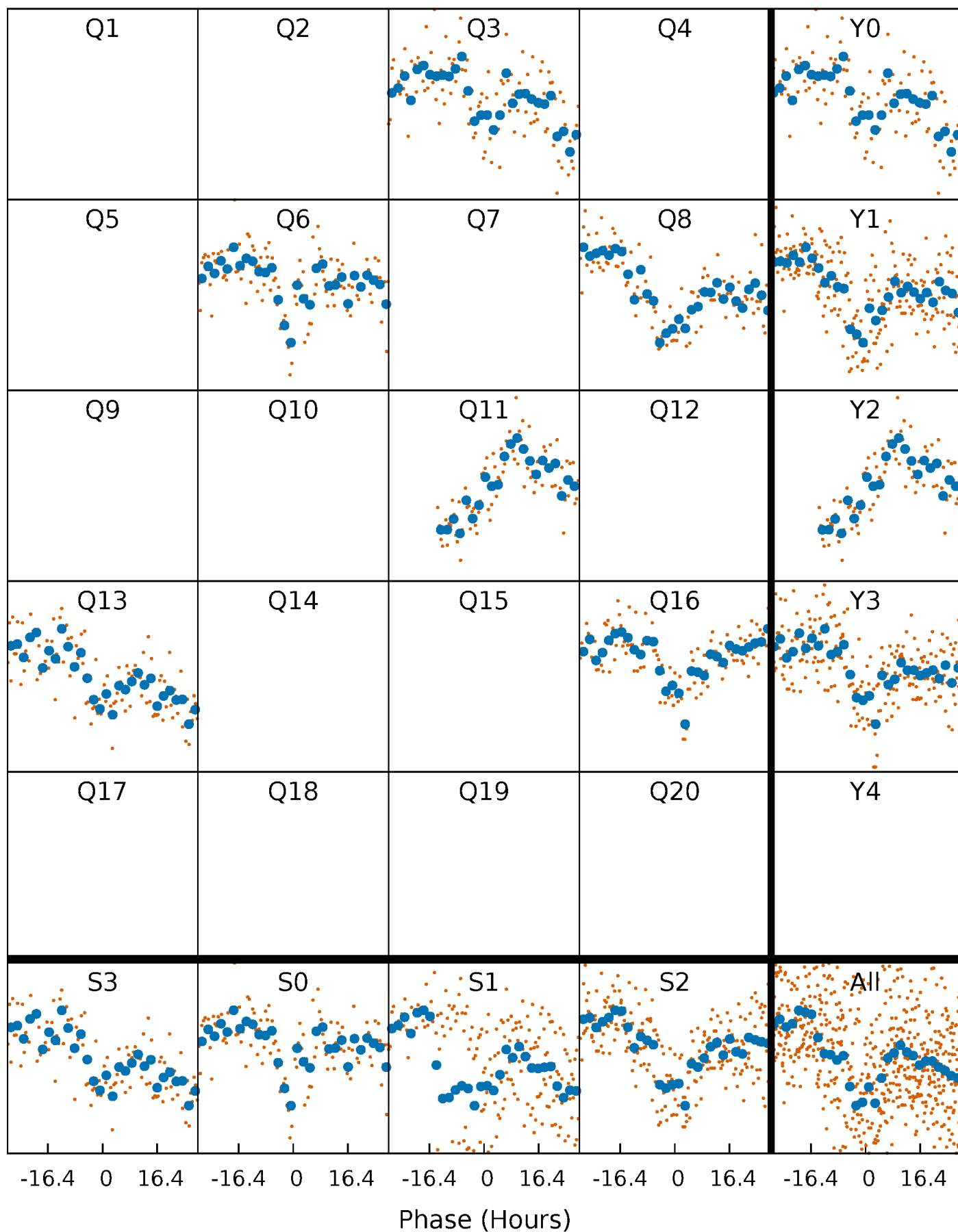


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

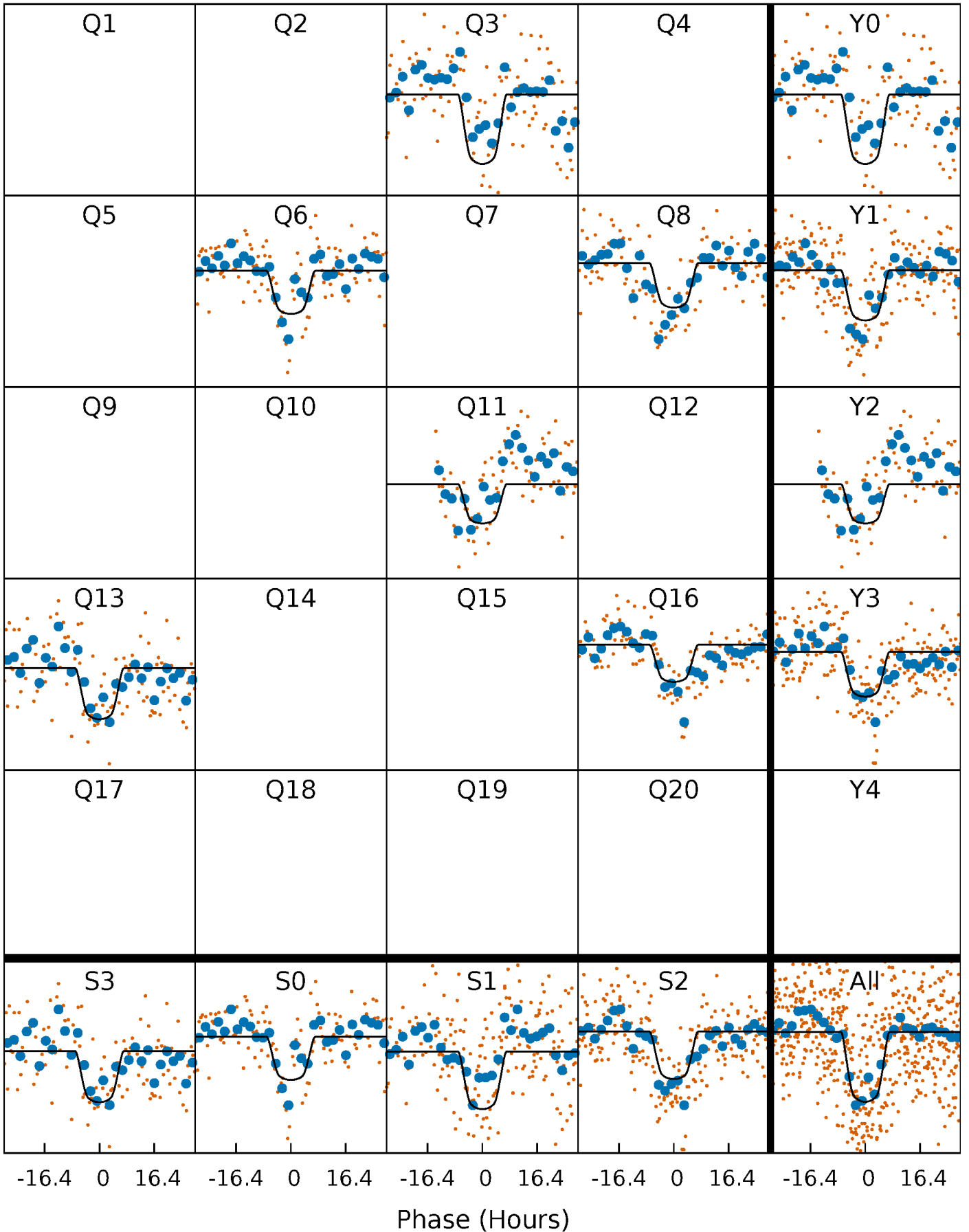
TCE 007829836-01 P=237.820217 Days  $T_0=320.182137$  (BKJD)





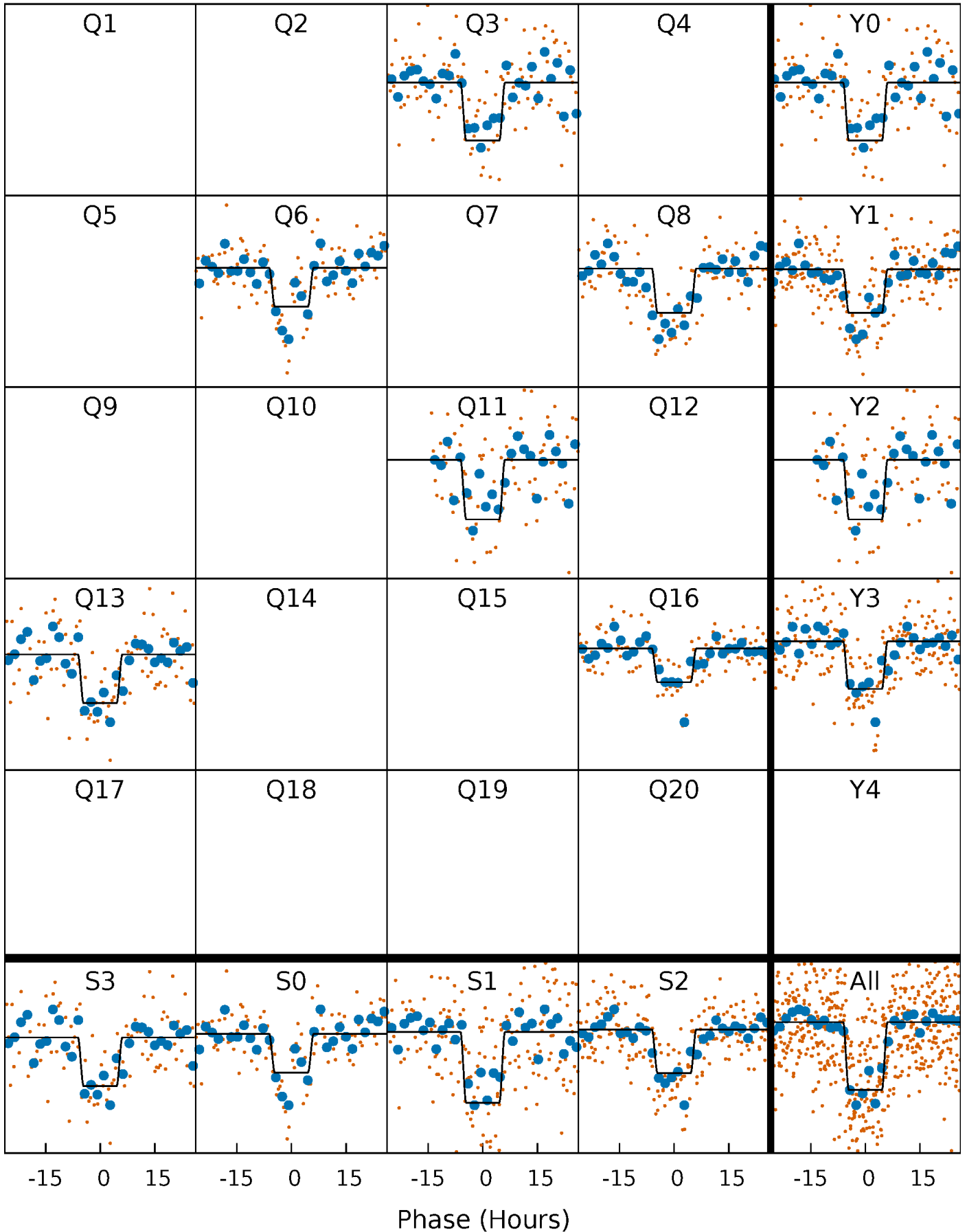
# DV Quarter-Phased Transit Curves

TCE 007829836-01   P=237.820217 Days    $T_0=320.182137$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

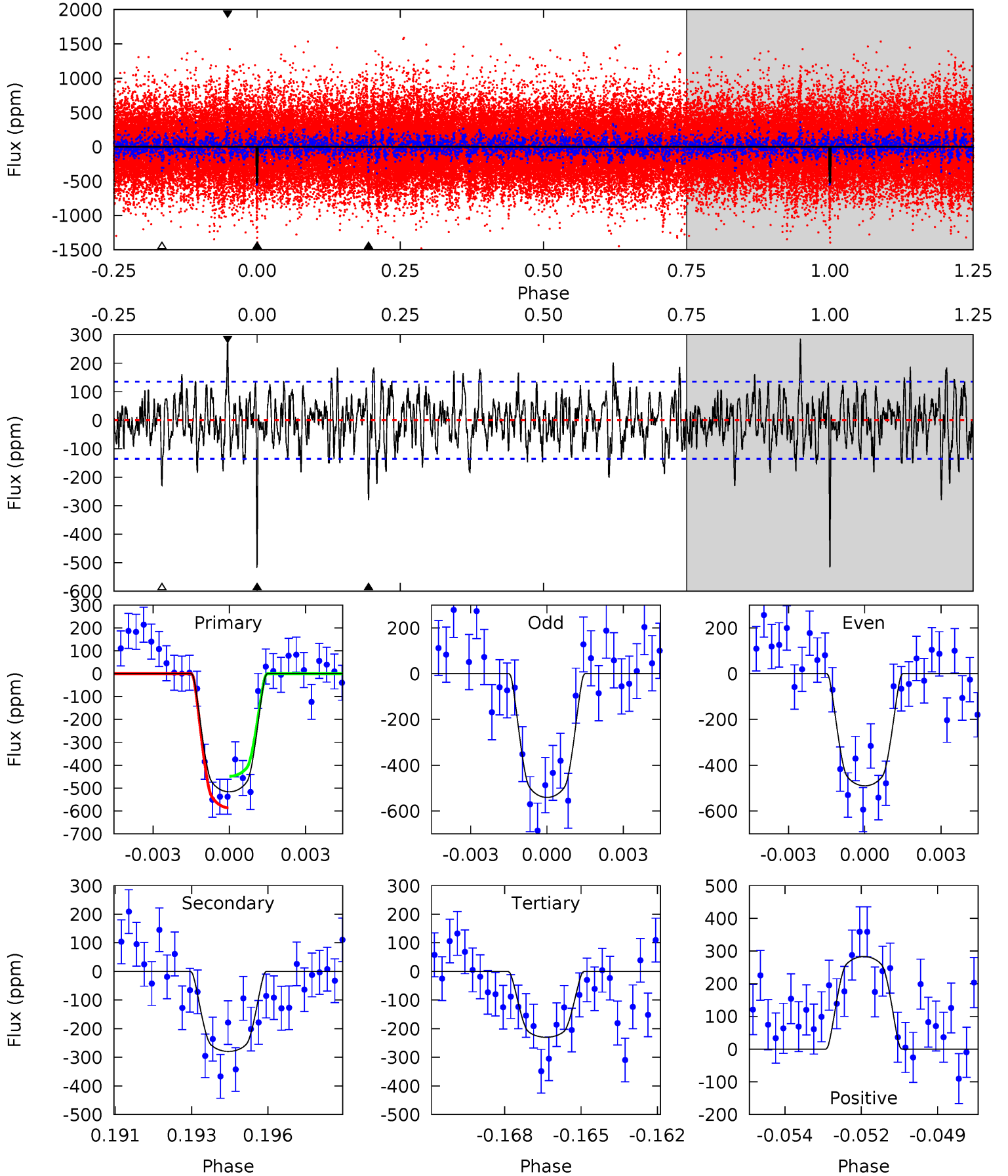
TCE 007829836-01 P=237.819394 Days  $T_0=320.191251$  (BKJD)



# DV Model-Shift Uniqueness Test

007829836-01,  $P = 237.820217$  Days,  $E = 82.361920$  Days

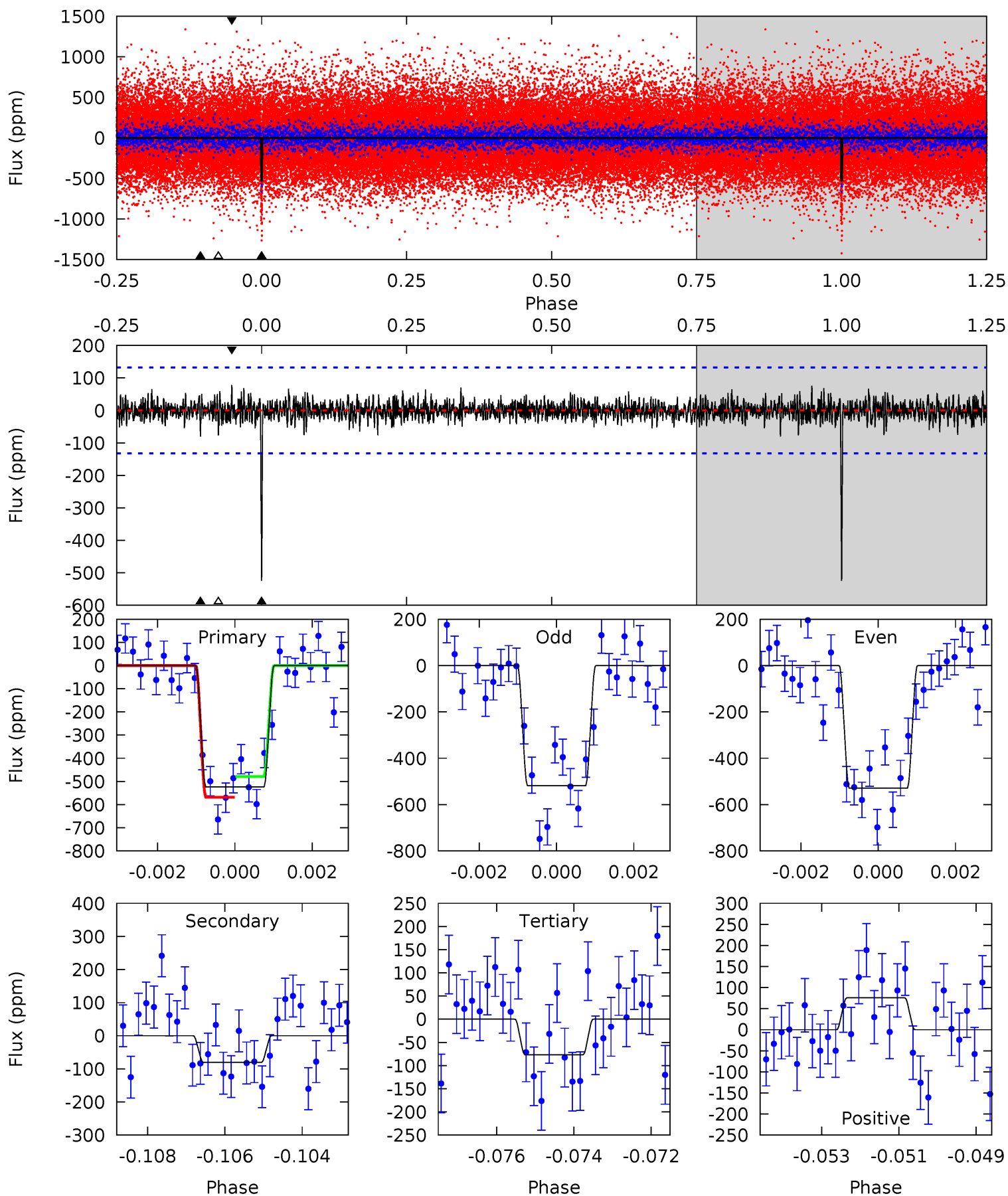
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 20.2 | 10.9 | 9.00 | 11.1 | 5.28            | 3.01            | 2.72             | 11.2    | 9.12    | 1.94    | -0.13   | 0.99    | 1.06 | 0.35  | 2.69 |



# Alt Model-Shift Uniqueness Test

007829836-01,  $P = 237.819394$  Days,  $E = 82.371857$  Days

| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 21.0 | 3.23 | 3.08 | 3.04 | 5.32            | 3.07            | 0.80             | 18.0    | 18.0    | 0.15    | 0.19    | 0.22    | 0.99 | 0.13  | 1.81 |



### Stellar Parameters For KIC 007829836

|        | $T_{\text{eff}}(K)$ | $\log(g)$                 | [Fe/H]                    | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
|        | $5878^{+70}_{-88}$  | $4.424^{+0.054}_{-0.117}$ | $0.080^{+0.150}_{-0.150}$ | $1.035^{+0.166}_{-0.071}$ | $1.038^{+0.070}_{-0.064}$ | $1.319^{+0.321}_{-0.465}$                 |
|        | +1%/-1%             | +1%/-3%                   | +188%/-188%               | +16%/-7%                  | +7%/-6%                   | +24%/-35%                                 |
| Source | SPE90               | SPE90                     | SPE90                     | DSEP                      |                           |   |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 007829836-01 / KOI 5433.01

| Detrend | Depth (ppm)   | $R_p (R_{\oplus})$     | $T_{max} (K)$     | $T_{obs} (K)$        | $A_{obs}$              |
|---------|---------------|------------------------|-------------------|----------------------|------------------------|
| DV      | $-280 \pm 26$ | $3.16^{+0.31}_{-0.28}$ | $425^{+16}_{-12}$ | $4707^{+183}_{-166}$ | $8863^{+1949}_{-1665}$ |
| Alt.    | $-80 \pm 25$  | $2.63^{+0.30}_{-0.28}$ | $425^{+17}_{-12}$ | $3992^{+243}_{-251}$ | $3664^{+1514}_{-1172}$ |

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming A=0.3)

$A_{obs}$  = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

## DV Centroid Data

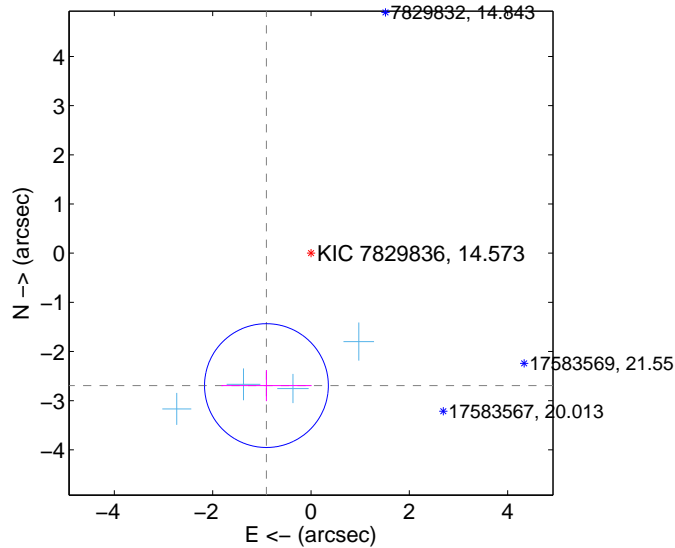
Supplemental centroid analysis for 007829836-01. Kepler magnitude: 14.57. Transit SNR 9.92

There are 4 quarters with good PRF difference image offsets

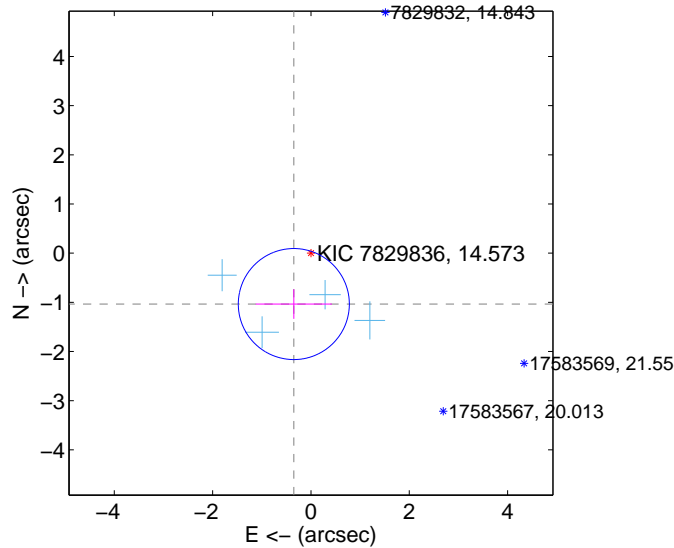
The OOT PRF centroid is offset from the target star catalog position by about 2.87 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA       | $\Delta$ Dec       |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT          | 2.842 $\pm$ 0.420  | 6.77                | 0.906 $\pm$ 0.918 | -2.693 $\pm$ 0.317 |
| PRF-fit source offset from KIC position | 1.092 $\pm$ 0.376  | 2.90                | 0.348 $\pm$ 0.774 | -1.035 $\pm$ 0.300 |
| photometric centroid source offset      | 1.02 $\pm$ 0.75    | 1.36                | -0.54 $\pm$ 0.55  | 0.86 $\pm$ 0.81    |

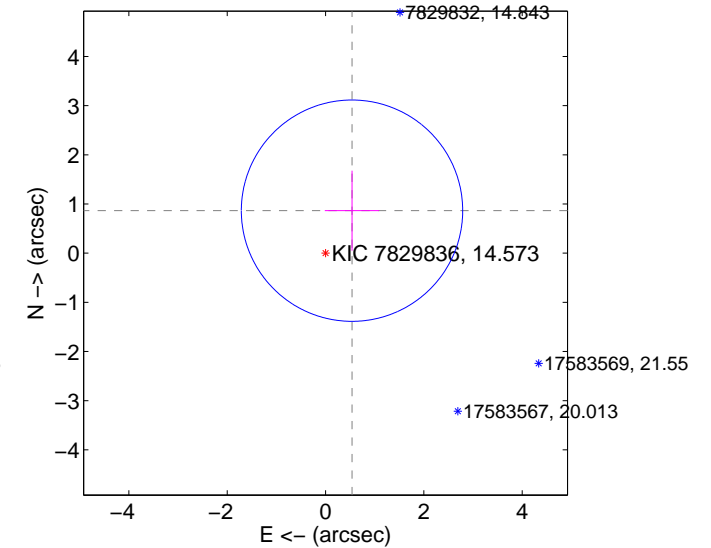
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

Q1 no difference image



Q1 no OOT image



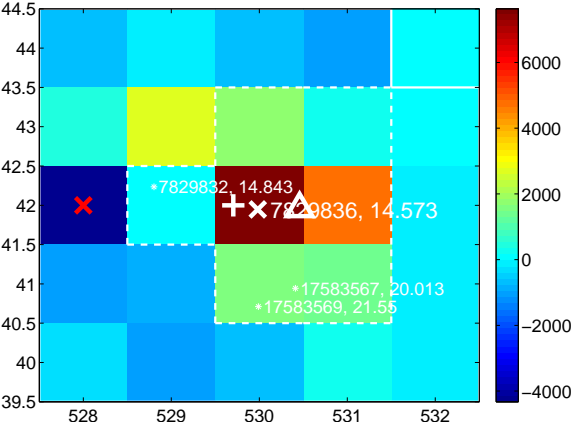
Q2 no difference image



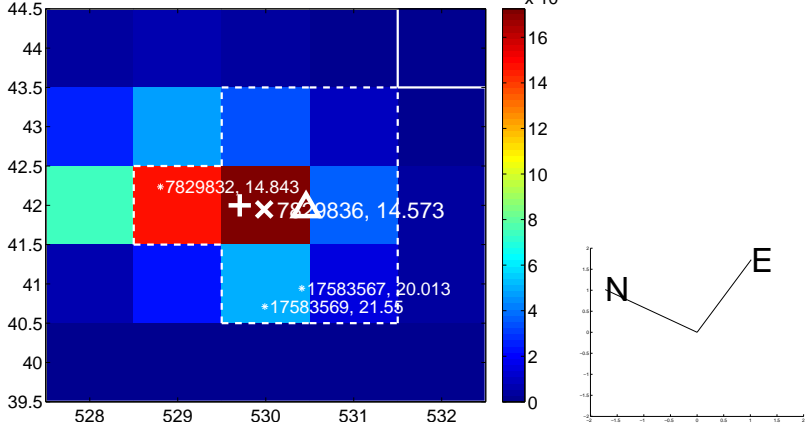
Q2 no OOT image



Q3 difference image



Q3 OOT image



Q4 no difference image



Q4 no OOT image



white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

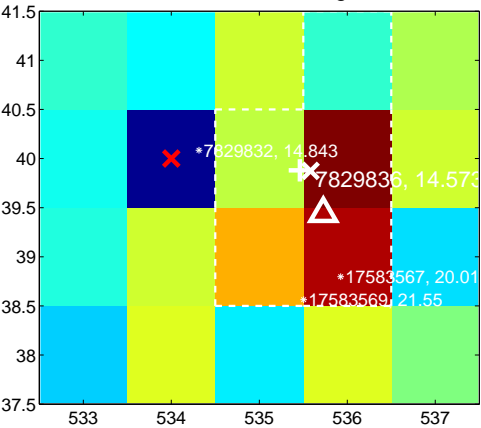
Q5 no difference image



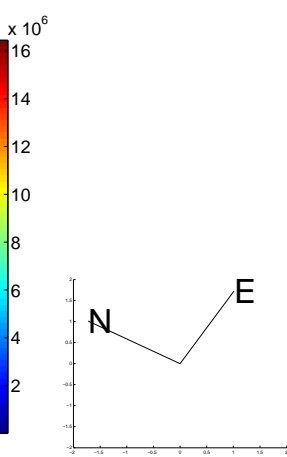
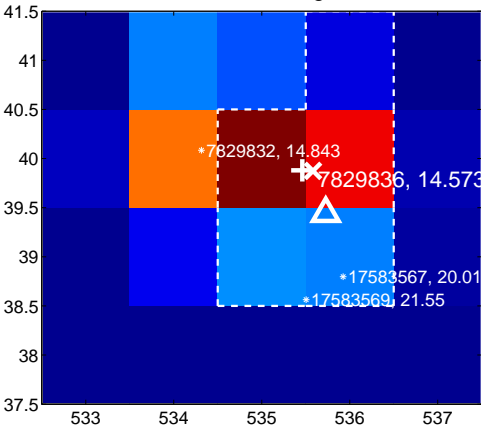
Q5 no OOT image



Q6 difference image



Q6 OOT image



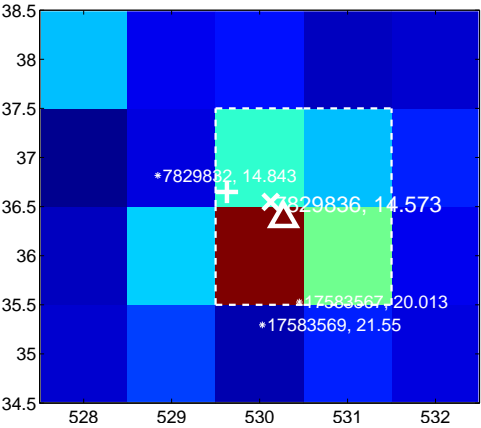
Q7 no difference image



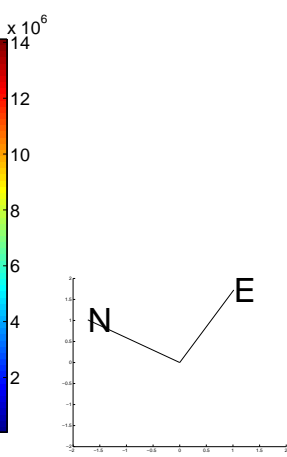
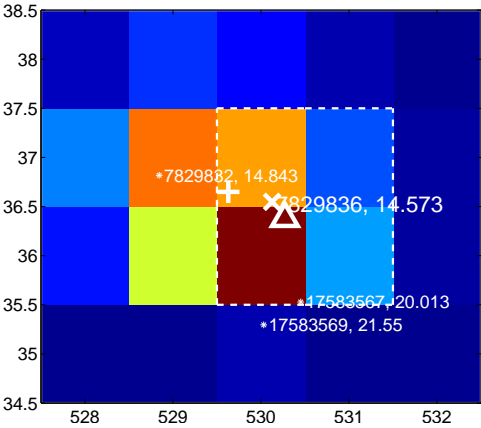
Q7 no OOT image



Q8 difference image



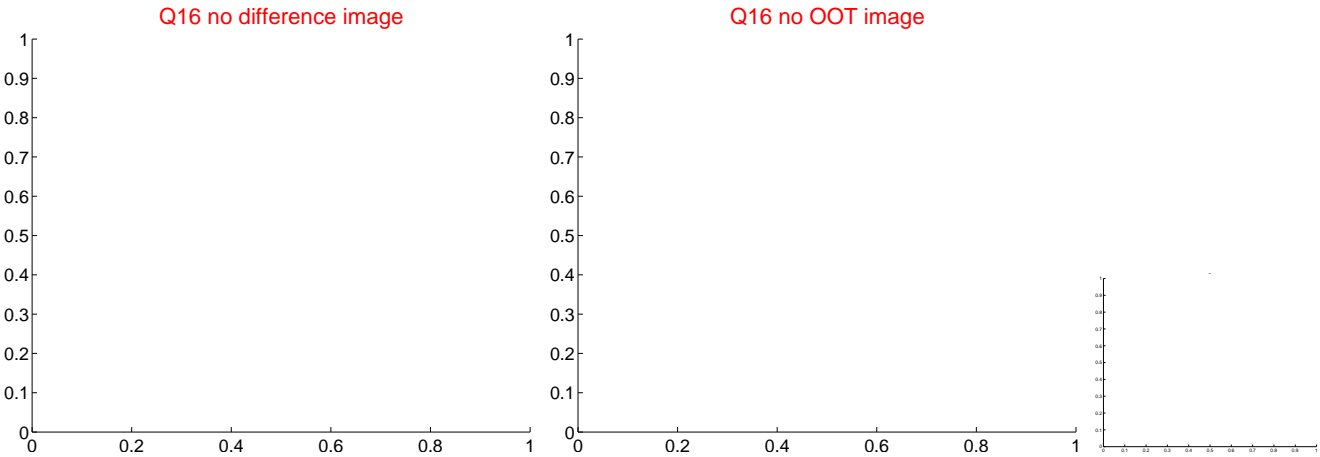
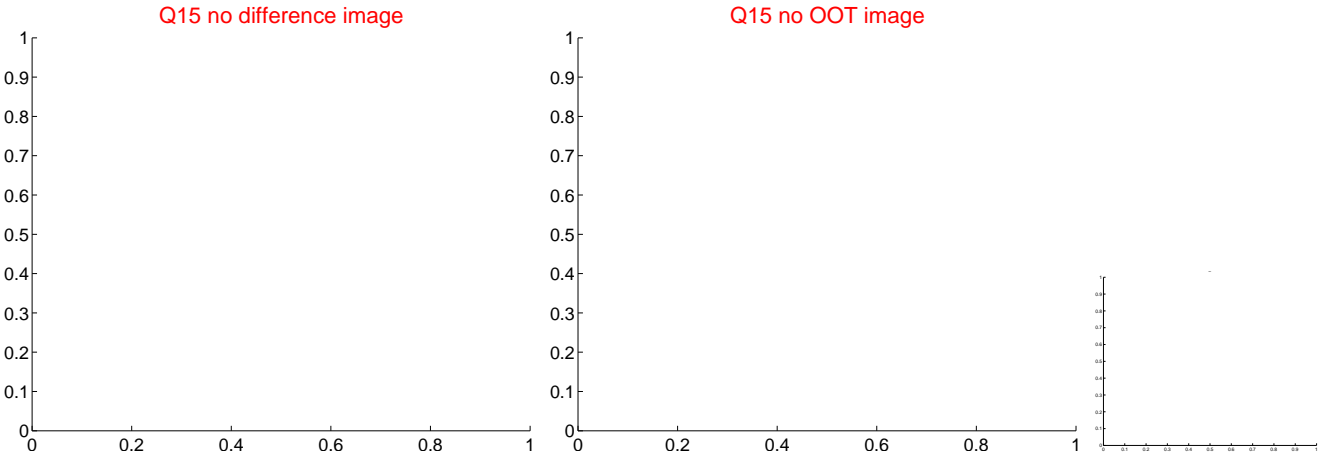
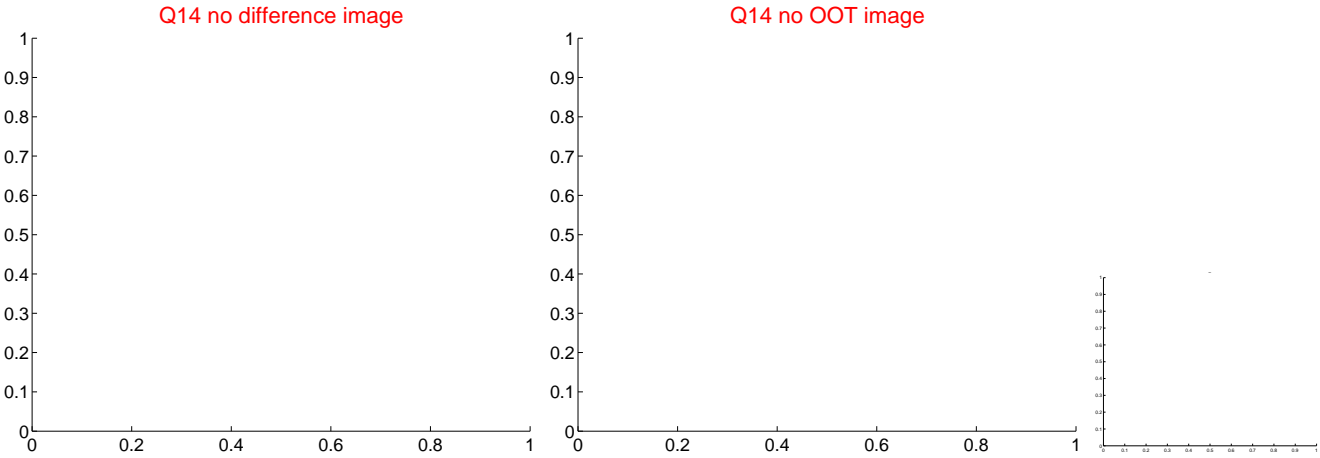
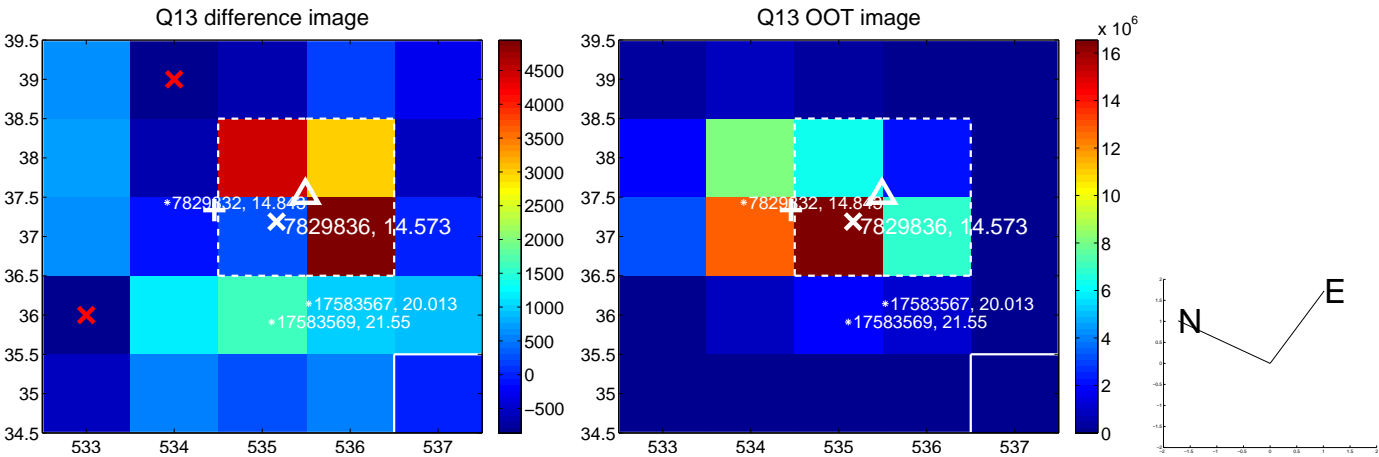
Q8 OOT image



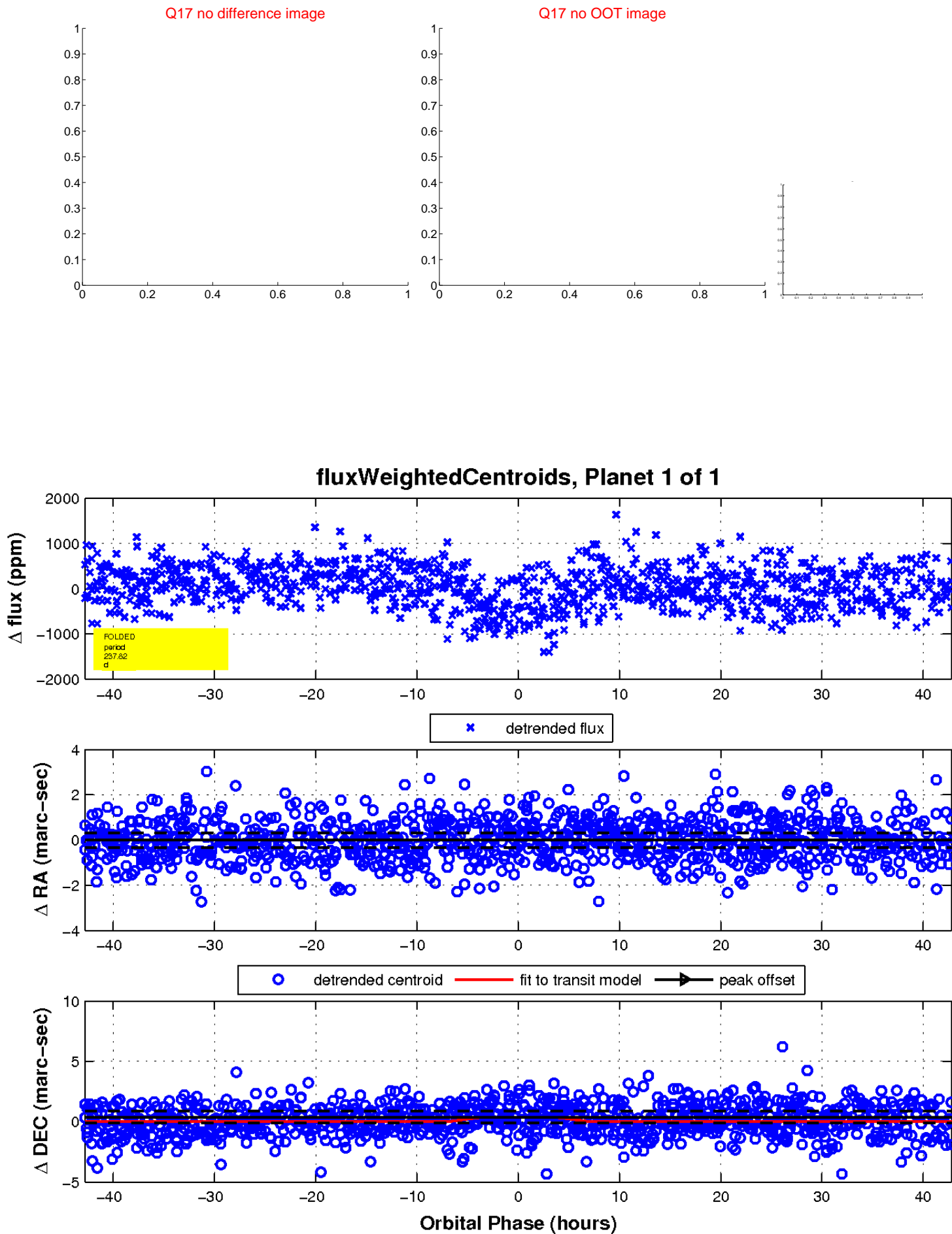
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

